

Claims

[c1] 1.A method of applying a solder filler to an aluminum body part, said method comprising the steps of:
applying a fluxing agent in past-like form to the aluminum body part;
heating the applied fluxing agent to deoxidize the surface of the aluminum body part;
applying a tin- or zinc-based solder filler to the deoxidized surface of the aluminum body part, the melting point temperature of the solder filler being at least 100 E C lower than the melting point temperature of the aluminum body part; and
heating the solder filler to bond the solder filler to the aluminum body part.

[c2] 2.The method of claim 1, wherein the solder filler comprises by weight of 73% to 85% Sn, 3% to 5% Zn, and 12% to 22% Cu.

[c3] 3.The method of claim 1, wherein the solder filler comprises by weight of 55% to 85% Sn, 12% to 40% Zn, and 3% to 5% of an element selected from the group consisting of Cu, Fe, Co, and Ni.

[c4] 4.The method of claim 1, wherein the solder filler comprises by weight of 78% to 98% Zn and 2% to 22% Al.

[c5] 5.The method of claim 2 wherein the solder filler comprises by weight of 77% Sn, 3% Zn, and 20% Cu.

[c6] 6.The method of claim 3 wherein the solder filler consists of, by weight, 66.5% Sn, 30% Zn, and 3.5% Ni.

[c7] 7.The method of claim 4 wherein the solder filler consists of by weight of 80% Zn and 20% Al.

[c8] 8.The method of claim 1 further comprises washing the aluminum body part to remove flux residue created during the heating step.

[c9] 9.The method of claim 1 wherein the fluxing agent is comprised of a combination of organic compounds and metallic salts.

[c10] 10.The method of claim 1 wherein the fluxing agent is comprised of a combination of complex organometallic salts.

[c11] 11.A method of applying a solder filler to an aluminum body part comprising the steps of:
forming a filler/flux mixture comprising a solder filler for aluminum body parts and a fluxing agent wherein the melting point temperature of the solder filler is at least 100 E C lower than the melting point temperature of the aluminum body part;
applying the filler/flux mixture to the aluminum body part; and
heating the filler/flux mixture to bond the solder filler to the aluminum body part.

[c12] 12.The method of claim 11 wherein the solder filler comprised by weight of 73% to 85% Sn, 3% to 5% Zn, and 12% to 22% Cu.

[c13] 13.The method of claim 11 wherein the solder filler comprised by weight of 55% to 85% Sn, 12% to 40% Zn, and 3% to 5% of an element selected from the group consisting of Cu, Fe, Co, and Ni.

[c14] 14.The method of claim 11 wherein the solder filler comprised by weight of 78% to 98% Zn and 2% to 22% Al.

[c15] 15.The method of claim 11 wherein the fluxing agent is comprised of a combination of organic compounds and metallic salts.

[c16] 16.The method of claim 11 wherein the fluxing agent is comprised of a combination of complex organometallic salts.

[c17] 17.The method of claim 11 wherein the filler/flux mixture is comprised of by weight about 10% of the fluxing agent and about 90% of a tin based solder filler.

[c18] 18.The method of claim 11 wherein the filler/flux mixture is comprises of by weight about 50% of the fluxing agent and about 50% of a zinc-based filler.

[c19] 19.A solder filler for aluminum body parts consisting by weight of 81% to 85% Sn, 3% to 5% Zn, and 12% to 14% Cu.

[c20] 20.A solder filler for aluminum body parts consisted by weight of 55% to 85% Sn, 12% to 40% Zn, and 3% to 5% Ni, Fe or Co.